PROCEEDINGS

OF THE

LINNEAN SOCIETY

OF

NEW SOUTH WALES.

Wednesday, 30th March, 1921.

The Forty-sixth Annual General Meeting, together with the Ordinary Monthly Meeting, was held in the Linnean Hall, Ithaca Road, Elizabeth Bay, on Wednesday evening, 30th March, 1921.

ANNUAL GENERAL MEETING.

Mr. J. J. Fletcher, M.A., B.Sc., President, in the Chair.

The Minutes of the preceding Annual General Meeting (31st March, 1920) were read and confirmed.

PRESIDENTIAL ADDRESS.

During the past year there have been a number of events of more than usual interest to those who follow the trend of progress in scientific affairs. The more important of these include (1) the placing of the Australian National Research Council on a permanent footing, (2) the permanent establishment of the Commonwealth Institute of Science and Industry, (3) the first Pan-Pacific Scientific Conference, and (4) the renewal of the regular meetings of the Australasian Association for the Advancement of Science.

To the close observer these events have special significance, indicating as they do an increased tendency for sympathetic international co-operation in scientific affairs, and also reflecting, in Australia, the almost world-wide attempts that are being made to bring about closer and more sympathetic relations between Science and Industry than have existed in the past.

Last year I drew your attention to the preliminary steps that had been taken towards the formation of an Australian National Research Council to work

in conjunction with the International Research Council. A provisional Council had been nominated, with a small executive, to hold office until the meeting of the Australasian Association for the Advancement of Science in January last. At this meeting the necessary steps were taken to place the Research Council on a permanent footing, and the following resolutions were agreed to:—

1. The Resolutions of the Conference held in Sydney on 21st August, 1919, shall cease to be operative from this day, 15th Jan. 1921.
2. The National Research Council shall consist of not more than 100 members and shall contain two or more representatives of each of the following branches of Science and of such others as may be determined from time to time by the General Council of the Australasian Association for the Advancement of Science. [List of Branches as in Resolution 3, with addition of Economics and Statistics and of Mental Science and Education. It was also decided to add a Section of Mining and Metallurgy (with Messrs. R. C. Sticht and G. C. Klug as representatives)].
3. The members of the provisional Council are hereby elected members of the Research Council, together with Mr. G. H. Knibbs and Mr. G. Lightfoot (representing Economics and Statistics), and Professor Laby.
4. The members as defined in Clause 3 shall co-opt additional members within the numerical limit prescribed in rule 2, and shall select such additional members in consultation with the Presidents of the more important Scientific, Technical and learned Associations and Societies of the Commonwealth.
5. The Council may appoint as Associate members, scientific workers resident in Australia who are deemed likely to confer benefit by their researches.
6. The Council may appoint such standing Committees and Special Committees as it deems requisite for national or inter-national purposes.
7. The Council may appoint such office-bearers as it may determine. These shall hold office for a term of two years and be re-eligible.
8. A meeting of the members as defined in Clause 3, shall be held at Sydney, not later than May, 1921, for the purposes indicated in rule 4, and a meeting of the whole Council so constituted shall meet as soon as possible thereafter for the purposes indicated in rules 5, 6, 7 and for the formulation of by-laws and any other necessary business.
9. Members unable to attend any such meeting may communicate their views beforehand in writing to the Hon. Sec. and all such communications shall receive full consideration at the meeting.
10. Every member and Associate member shall retain his membership for life unless it be terminated (1) by his resignation, (2) by his ceasing to reside in Australia, (3) by vote of at least two-thirds of the members.
11. The Council shall submit a full report of its work and proceedings to the Australasian Association for the Advancement of Science on the occasion of each meeting of the Association.
12. Until other arrangements are made for the financial support of the Council, each member thereof shall be liable to contribute the sum of £2 2s. per annum, and each Associate member £1 1s. per annum.
13. That the Provisional Executive Committee be asked to continue to act *pro tem.* till the Council has appointed its office-bearers.

Supplementary.

a. Resolution 3 of 21st August, 1919, reads as follows:—

"That the branches of science to be represented include:—Agriculture, Anthropology, Astronomy, Botany, Chemistry, Engineering, Geography, Geology, Mathematics, Meteorology, Pathology, Physics, Physiology, Veterinary Science, Zoology."

b. The provisional executive committee appointed at the same time is as follows:—Professor Sir Edgeworth David, K.B.E., D.S.O., D.Sc., F.R.S. (Chairman), Mr. R. H. Cambage, F.L.S. (Honorary Secretary), Professor H. G. Chapman, M.D., Mr. J. H. Maiden, F.R.S., Professor J. A. Pollock, D.Sc., F.R.S.

The Bill for the establishment of the Commonwealth Institute of Science and Industry has, after much delay, become law, and the Institute is now on a permanent footing. Unfortunately, the general necessity for economy has resulted in a considerable curtailment, both as regards funds and personnel, compared with the intentions of some two or three years ago. The present functions and scheme of working of the Institute may perhaps be best expressed by the following two sections of the Bill:—

5. The Institute shall establish (*a*) a Bureau of Agriculture; (*b*) a Bureau of Industries; and (*c*) such other bureaux as the Governor-General determines.

6. The Governor-General may appoint a General Advisory Council and Advisory Boards in each State to advise the Director with regard to (*a*) the general business of the Institute or any bureau thereof; and (*b*) any particular matter of investigation or research.

The scope for such an Institute is unlimited; a high standard has been set by the Advisory Council, a temporary body which has carried on the work for some years past, and in wishing the permanent Institute success, we can only hope that this standard may be maintained or perhaps even surpassed.

An event of considerable importance to science in Australia was the first Pan-Pacific Scientific Conference, held in Honolulu in August, 1920. This Conference was convened by the Pan-Pacific Union, the general idea being to stimulate the consideration of scientific problems connected with the Pacific Ocean and the countries bordering it. With this object, invitations were issued to scientific workers and scientific institutions in countries bordering the Pacific, and as a result some 110 delegates attended the first Conference, including representatives from the Hawaiian Islands, Canada, United States of America, Australia, New Zealand, Philippine Islands, China and Japan. Apart from the discussion of scientific problems, preliminary steps were taken to set up a permanent organisation designed for the advancement of the common interests of the Pacific, including scientific research. Pending the establishment of this permanent body, a provisional Council was elected consisting of one representative from each of the countries mentioned above except China. The Australian representative on this Council is Mr. E. C. Andrews, Government Geologist of New South Wales.

This organisation paves the way for helpful co-operation between Institutions and Governments in the various countries bordering the Pacific in working our common problems; should it succeed in becoming permanently established we may expect great advances towards the elucidation of the many scientific problems so intimately associated with the Pacific Ocean and its borders.

It is proposed to hold triennial meetings, and there is a possibility of the next meeting being held in Wellington, N.Z. Australia had six representatives at the Honolulu meeting, four of them—Dr. L. A. Cotton, Messrs. E. C. Andrews, C. Hedley and C. A. Sussmilch—being Members of this Society, the other two being Professors F. Wood-Jones, of Adelaide, and H. C. Richards, of Brisbane.

The fifteenth meeting of the Australasian Association for the Advancement of Science, the first since 1913—no meeting having been held during the War—was to have been held in Hobart in January. As a result of the dislocation of shipping by strikes, a change of plans became necessary at the last minute, and the meeting was held in Melbourne. Despite the short notice and the unfavourable conditions resulting from the strike the meeting was a highly successful one.

Many important and interesting discussions took place both on the papers presented and on special subjects. One very urgent matter brought forward, a subject in which this Society is especially interested, was the need for some organisation to provide for the systematic working out of our fauna and flora, more particularly those sections of it which are being rapidly exterminated. The Biology Section recommended the formation of an Inter-State Committee composed of representatives of all the various Societies concerned with the study of natural history and the preservation of our flora and fauna, whose duty it would be to organise, each in its own State or locality, the carrying out of special investigations. Sir Baldwin Spencer has further called attention to the urgency of this subject in the Victorian Naturalist for February, 1921, pp. 120-122. Referring more particularly to the land and fresh-water fauna, he says (pp. 120-1): —"Settlement and bush-fires are interfering disastrously with the land and fresh-water fauna, and yet it is perhaps the most interesting in any part of the world. Important as is the study of the marine fauna, we must, from a scientific point of view, realize very clearly the fact that this will ever be with us, and we can investigate it at our leisure; but the land and fresh-water fauna is disappearing rapidly, and unless we now make an organised effort it will be too late to study it effectually, and future generations will wonder what manner of people we were not to leave behind us some adequate record of the marvellously interesting forms of animal life which we had succeeded in exterminating."

We cannot but admit the seriousness of the position from the scientific point of view, and it behoves us, not only as a Society, but as individuals interested in Natural History, to do all in our power to assist such a movement as that proposed.

The magnificent bequest of the late Sir Samuel McCaughey to the University of Sydney has allowed, amongst other things, the establishment of a number of additional Chairs and Lectureships. Of these we are particularly interested in the appointment of an Associate Professor of Geography and of a Lecturer in Entomology. Geography is one of the subjects in which a Linnean Macleay Fellowship may be awarded, and there is little doubt that under the guidance of Professor Griffith Taylor, himself a man of distinguished researches in his subject, there will spring up a school of students eager for the opportunity of conducting research in this rather neglected branch of science in Australia. Our little band of enthusiastic workers in Entomology has accomplished work of a high standard in the past, but with the field so wide and the workers so few the difficulties have been great. We therefore heartily welcome the prospect of an opportunity being provided by which students may obtain a systematic training in the subject, and look forward to notable developments in this very important

branch, not only on its purely scientific side, but also in its economic application.

The Special Meeting held on 14th June last in Commemoration of the centenary of the birth of Sir William Macleay, the Society's benefactor, was a very successful function. As one of the results we have now on record (in Part iv. of the Proceedings for 1920) a detailed historical record of the Society's interest in Alexander, William Sharp, and George Macleay.

The Society's Honour Roll was unveiled at the above meeting by Professor Wilson, and now hangs in the Hall as a permanent record of the names of those Members of the Society who served the Nation abroad during the Great War. The Roll is the work of Mr. Hardy Wilson, who has furnished the following explanation of the design:—

"I have used Roman lettering surrounded by the Roman roll and bead; the whole design contained within an adaptation of the Roman egg and dart ornament.

In the coloured border are introduced ancient Chinese symbols. At the corners are endless knots which signify eternal or everlasting. From the knots depend strings of Bay leaves, symbols of honour. At the centre of each side is a very ancient Chinese sign, representing Victory. Thus the border may be read:—

Everlasting Honour for their Victory.

Adjoining are conventionalised bats. The bat is a favourite device in old Chinese Art, and signifies happiness. At the angles is a peach, another old sign, for longevity. This margin, then, may be read:—

Wishing them long life and happiness."

A coloured reproduction of the Roll accompanies Part iv. of the Proceedings for 1920 as a frontispiece.

On the occasion of the visit of H.R.H. the Prince of Wales to Sydney in June last the Council decided to present to His Royal Highness an address of loyalty and welcome on behalf of the Members of the Society. The text of the address, as officially approved, was as follows:—

"We, the Members of the Linnean Society of New South Wales—a Society founded in 1874 to develop the study of the Natural History of Australia, as its great English prototype, the Linnean Society of London, has done to encourage that of the Natural History of the British Isles—desire to be allowed to offer to Your Royal Highness, with all due respect, this brief record of our loyalty to the Throne, of the pleasure evoked by the visit of Your Royal Highness as the representative of our revered Sovereign, and our respectful greetings and sincere wishes for an enjoyable and fruetifying visit, and for the welfare of Your Royal Highness."

The concluding Part of Volume xlv. of the Society's Proceedings was issued on 7th March. The complete volume (653 and xxi. pp., 32 Plates, and 138 Text-figures) contains thirty-two papers, nine of which were contributed by members of the Society's research staff. This completes the first volume in the new size, and the result of the change in size may be considered wholly satisfactory.

The greatly increased cost of scientific publications has been the cause of much worry to Councils of scientific Societies the world over (*see* Nature, 6th May, 1920, p. 285), and in very many cases it has been found necessary to greatly restrict publication or to raise subscriptions. We are indeed fortunate, and we should acknowledge our debt in this respect to our Benefactor, Sir William Macleay, in having been able to carry on with only very little restriction in the amount of printing. The issue of the Monthly Abstract of Proceedings was

discontinued from July, 1916, to October, 1919, but the Proceedings have been issued uninterruptedly, and have suffered no reduction in volume.

One of the most serious consequences to the scientific community of this increase in the cost of publishing was the possibility of the discontinuance of the publication of the International Catalogue of Scientific Literature. An international conference, convened by the Royal Society of London, met to consider this matter last year. They came to the conclusion that, "even though a change be made in the future in the method of indexing, it is imperative to continue the International Catalogue of Scientific Literature in its present form until the literature published up to the end of the year 1915, and possibly also that up to the end of the present year 1920, has been catalogued. In this way the important scientific work carried out during the War period will become available for reference at an early date and continuity in the work of indexing be maintained." (Nature, October 7, 1920, p. 195). This recommendation was to be placed before the Council of the Royal Society for consideration.

In the meantime efforts have been made to obtain additional subscribers to the Catalogue, and also to ascertain whether former purchasers would continue at the increased charges necessitated by the increased costs. It is the earnest hope of all concerned that the Royal Society may see its way clear to continue the issue of this invaluable publication.

The question of the issue of the Catalogue for papers published after 1920 was referred to a committee of the delegates at the Royal Society's conference for further consideration.

Exchange-relations with Societies and Institutions show a more decided return this year towards normal. The receipts for the Session amounted to 1603 additions to the library, being more than for the years immediately preceding the War. This is, of course, due to the receipt of publications issued during the War by many Societies, etc., who were unable to despatch their volumes to us as they were issued. In addition to the Belgian Societies to which I made special reference last year, we have resumed exchange-relations with Societies in countries which have been cut off for exchange purposes for some years—these include Norway, Sweden, Finland, France, Holland, Hungary and Austria—and we have also resumed exchanges with one German institution.

During the year the following additions have been made to the list of journals obtained in exchange for the Society's Proceedings:—American Journal of Botany, Annals of the Durban Museum, Bulletin of the Public Museum of the City of Milwaukee, Journal of the Arnold Arboretum of Harvard University, Journal of Experimental Zoology, Journal of Morphology, Natural History (from the American Museum of Natural History), Trabajos del Museo Nacional de Ciencias Naturales (Madrid).

The scientific portion of the library of the late F. M. Clements, bequeathed by him to the Society, formed a very valuable addition to the library, more particularly to the ornithological section. In addition to a number of small books on electricity and a few medical works, this bequest included the following volumes:—Ball, Sir Robert, The Story of the Heavens (1905); Bentley, R., A Manual of Botany (1887); Blakston, W. A., Swaysland, W., and Wiener, A. F., The Book of Canaries and Cage Birds; Bonhote, J. L., Birds of Britain (1907); Broinowski, Gracius J., Birds of Australia, Vols i.-vi., (1890-1891); Buller, Sir W. L., Birds of New Zealand, Vols. i.-ii. (1888); Collinge, W. E., The Food of Some British Wild Birds; A Study in Economic Ornithology (1913); Department

ot Mines, N.S.W., Palaeontology No. 4. The Fossil Fishes of the Hawkesbury Series at Gosford. By A. S. Woodward, F.Z.S., F.G.S. (1890); Des Murs, O., Iconographie Ornithologique, Pt. i, (1849); Dewar, Douglas, Indian Birds (1910); Dixson, Charles, The Bird-Life of London (1909); Duncan, F. M., Our Insect Friends and Foes (1911); Fabre, J. H., The Life and Love of the Insect (1914); Favene, Ernest, The History of Australian Exploration (1888); Forbes, George, History of Astronomy (1909); Froggatt, Gladys H., The World of Little Lives (1916); Fyfe, H. H., South Africa To-day (1911); Gale, Albert, Australian Bee Lore and Bee Culture (1912); Aquarian Nature Studies (1915); Gosse, P. H., Illustrations of the Birds of Jamaica (1849); The Birds of Jamaica (1847); Gould, J., Monograph of the Trochilidae, Vols. i.-v. (1861); Handbook to the Birds of Australia, Vols. i.-ii. (1865); Gray, G. R., Hand-list of Genera and Species of Birds, Pts. i.-iii. (1869-1871); The Genera of Birds, Vols. i.-iii. (1844-1849); Green, J., Ocean Birds (1887); Greene, W. T., Parrots in Captivity, Vols. i.-iii. (1884-1887); Haddon, A. C., History of Anthropology (1910); Harmsworth Popular Science, Vols. i.-vii.; Haeckel, Ernest, The Evolution of Man, Vols. i.-ii. (1910); Haeckel, Ernest, and Lankester, E. R., The History of Creation, Vols. i.-ii. (1883); Hopkins, G. M., Experimental Science, Vols. i.-ii. (1902); Johnston, Sir Harry, Liberia, Vols. i.-ii. (1906); Knox, A. E., Ornithological Rambles in Sussex (1850); Game Birds and Wild Fowl; Their Friends and Their Foes (1850); Layard, E. L., and Sharpe, R. B., The Birds of South Africa (1884); Leach, J. A., An Australian Bird Book (1916); Legge, Capt. W. V., Birds of Ceylon, Vols. i.-ii. (1880); Lloyd, L., The Game Birds and Wild Fowl of Sweden and Norway (1867); Lucas, A. H. S., and Le Souef, W. H. D., The Animals of Australia (1909); The Birds of Australia (1911); Lyell, Charles, Principles of Geology, Vols. i.-iii. (1840); Marriner, G. R., The Kea: A New Zealand Problem (1908); Mathews, G. M., A List of the Birds of Australia (1913); Morris, B. R., British Game Birds and Wild Fowl (1891); Morris, Rev. F. O., A History of British Birds, Vols. i.-vi. (1895-1897); Morris, Rev. F.O., and Tegetmeier, W. B., Nests and Eggs of British Birds, Vols. i.-iii. (1896); Mueller, Baron F. von, Eucalyptographia (1884); Osborn, H. F., Men of the Old Stone Age (1918); Parker, T. J., and Haswell, W. A., A Text-Book of Zoology, Vols. i.-ii. (1910); Pescott, E. E., The Native Flowers of Victoria; Proceedings of the Zoological Society of London, 1918, Pts. iii.-iv. (1919); Randall-Maciver, D., Mediaeval Rhodesia (1906); Roughley, T. C., Fishes of Australia and their Technology (1916); Sclater, P. L., A Monograph of the Jacamars and Puff Birds (1879-1882); Selous, F. C., African Nature Notes and Reminiscences (1908); Shelley, Capt. G. E., Sun-Birds (1876-1880); Smith, R. B., Bird Life and Bird Lore (1909); Sulman, Florence, The Wildflowers of N.S.W., Vol. ii. (1914); Swainson, W., A Selection of the Birds of Brazil and Mexico (1841); Thomas, H. H., The Rose Book (1913); Thompson, W., The Natural History of Ireland, Vols. i.-iii. (1849-1851); Thorington, J., Refraction and How to Refract (1911); Thorpe, Sir Edward, History of Chemistry, Vols. i.-ii. (1909-1910); Turner, Fred, Australian Grasses, Vol. i. (1895); Weber, C. O., The Chemistry of India Rubber (1903); Wood, Rev. J. G., Insects at Home (1883); Wonderful Nests (1887); Woodward, H. B., History of Geology (1911); Yarrell, William, A History of British Birds, Vols. i.-iii. (1843).

The Society has also received during the year copies of Botanical Magazine (16 vols.) and "Histoire Naturelle" (3 vols., published 1750), bequeathed to it by the late E. R. Deas Thomson.

During the year sixteen Ordinary Members were elected, two resigned, and one died. In addition, three names have been removed from the list, and news has been received of the decease of one of our members in England. The number of Ordinary Members now on the roll is 159.

Frederick Moore Clements, an Englishman by birth, died at Stanmore on 19th August, 1920, at the age of 63 years. He spent the early part of his life in Birmingham, where he served his apprenticeship to a chemist. After spending about a year in South Africa, he came to Sydney towards the end of 1881. He was elected a member of the Pharmaceutical Society of New South Wales in 1884, and of the Pharmaceutical Society of Australasia in 1891. Mr. Clements was a man who attained considerable eminence in his profession, being perhaps best known for his manufacture of Clements' Tonic for which purpose he erected a large factory at Enmore, selling a greater part of his interest to a company in 1906. He made a special study of and took great interest in the application of electricity in his profession. Apart from his profession he was a man of many hobbies, amongst which were included a very keen interest in both botany and ornithology. He was elected a Fellow of the Zoological Society of London (1910), of the Linnean Society of London (1917), and of the Royal Geographical Society of London (1919), and a member of this Society in 1911. His great interest in botany and ornithology is shown by the many rare plants in his fine garden at Stanmore and by his aviary, as well as being reflected in his library.

Although we never had the privilege of seeing him at our meetings, we know that he took some interest in the Society by reason of his having bequeathed to it the scientific portion of his library and two pictures. This magnificent bequest consists of over one hundred volumes on natural science, a list of which is given above (pp. 6, 7), in addition to a large number of medical and electrical works.

His broad human sympathies are indicated by the wide scope of his bequests to charitable and other institutions, among which may be noted Dr. Barnardo's Homes, The Ragged School Union, The National Institute for the Blind, and The Royal Humane Society.

Thomas de Gray, sixth Baron Walsingham, who became a member of this Society in 1892, died on 3rd December, 1919. He was the greatest authority on the Microlepidoptera of the World, and we take the following summary from Entomological News (May, 1920, xxxi., No. 5):—He was born in Mayfair, London, July 29, 1843, went to Eton in 1856, and to Trinity College, Cambridge, in 1860. The University made him B.A. in 1865, M.A. in 1870, and High Steward and LL.D in 1891. He was a member of the House of Commons for West Norfolk, 1865-1870, succeeding to the title and estates of his father in the latter year. He was appointed a Trustee of the British Museum in 1876, and to it he gave his entomological library and collections in 1910. These consisted very largely of Lepidoptera, both imagines and larvae, especially of the Microdepidoptera.

He was elected a Fellow of the Royal Society in 1887, and was President of the Entomological Society of London, 1889-90.

The Rev. W. W. Watts was born on 5th October, 1856, near Ivybridge, Devonshire, England. He was a student at New College, London, for six years, preparing for the Congregational ministry. He was ordained and held a charge at Stratford-on-Avon, but, ill-health having supervened, he came to Australia and settled at Milton, Queensland. The floods of 1893 destroyed both church and house, and he went to New Zealand, where he began his first studies on ferns and mosses. He was resident in New South Wales for many years, and, having be-

come a Presbyterian Minister, he received a charge in the Richmond River district, where he had great facilities for his special botanical studies. Later, he settled in the Sydney district, at Gladesville, and was Honorary Custodian of Ferns and Mosses in the National Herbarium from 1909 till 1916, when he left for Melbourne. He was liberal in his contributions to the National Herbarium, and after his death, which took place at Canterbury, Victoria, on 20th September, 1920, his collection of ferns and mosses, which contained a large number of types, was purchased for that institution.

He was a member of this Society from 1912 to 1919, and contributed 14 papers, in addition to 5 joint papers, during the years 1899 to 1918. The majority of these dealt with Australian Mosses and Hepatics, adding considerably to our knowledge of these groups in Australia. I am indebted to Mr. J. H. Maiden for very kindly supplying much of the above information.

Two more of our older Members, Messrs. A. A. Hamilton and H. G. Smith, have joined those who have retired from their official duties. Mr. Hamilton has for a number of years been Botanical Assistant at the Botanic Gardens, and has taken especial interest in the ecological side of botanical work. Mr. Smith has been associated with Mr. R. T. Baker at the Technological Museum, where their joint researches, such as those on the Eucalypts and Pines of Australia, have commanded worldwide notice, and have done much to foster the development of the economic possibilities of portions of the Australian flora.

To Mr. R. T. Baker, who has recently been honoured by the award of the Mueller Memorial Medal by the Australasian Association for the Advancement of Science, I would offer on behalf of Members, very cordial congratulations. Mr. Baker's work is well known to us, and it is particularly appropriate that his botanical researches should be recognised by this award which commemorates the work of one of the most distinguished Australian Botanists. Previous recipients of the medal include A. W. Howitt (1904), J. P. Hill (1907), T. W. Edgeworth David (1909), R. Etheridge, Jr. (1911), and W. Howchin (1913), three of them having been Members of this Society.

To the following Members we offer our cordial congratulations and good wishes:—Dr. Robert Broom, a Corresponding Member, on his election as a Fellow of the Royal Society; Sir Edgeworth David and Mr. J. H. Campbell on the honour conferred on them by His Majesty the King in their inclusion in the list of recipients of Honours of the British Empire Order; Professor J. T. Wilson, on his appointment as Regius Professor of Anatomy in the University of Cambridge; Professor H. G. Chapman, on his appointment as Professor of Physiology in the University of Sydney in succession to the late Professor Anderson Stuart; Mr. A. H. S. Lucas, on his appointment as Headmaster of the Sydney Grammar School; Dr. E. W. Ferguson, who has been appointed Principal Microbiologist in succession to Professor J. B. Cleland; Dr. H. Priestly, on his appointment as Associate Professor of Physiology in the University of Sydney; Dr. C. Anderson, on his selection for the important position of Director of the Australian Museum; and Mr. C. Hedley, on his appointment as Principal Keeper of the Zoological Collections in the same Institution.

The year's work of the Society's research staff may be summarised thus:

Dr. R. Greig-Smith, Macleay Bacteriologist to the Society, contributed one paper, "Ropiness in Wattle Bark Infusions," which appeared in Part i. of the Proceedings for 1920. A further examination was made of the bacteria contained in nodules at the base of Eucalyptus seedlings; a varied flora was obtained

from these nodules, including some organisms which may possibly be the *B. tumefaciens* of Erwin F. Smith, or perhaps the Rhizobium of the Leguminosae, and others that differ in liquefying gelatine. As far as the examination was carried each nodule appeared to have a flora of its own. Infection experiments with the bacteria so obtained gave entirely negative results. An investigation into the fermentation of the tan-bark used in connection with the corrosion of white lead resulted in the discovery of bacteria which grow actively at 60° C.; and some proof was obtained of the fermentation by this high temperature organism which also ferments sugar under certain conditions. The results obtained to date form the subject of a paper which is ready for publication. A short note has also been prepared on "the extraction of acids from cultures" being the outcome of an unsuccessful attempt to obtain tartaric acid from the fermentation of sugar. Attempts were also made, but without success to obtain a glucoside from the activity of wattle-bark bacteria, and to obtain eugenol from leaves of Melaleuca containing methyl-eugenol, by yeast fermentation.

The Council has granted Dr. Greig-Smith leave of absence during 1921 for the purpose of visiting Europe and getting into touch with the more prominent workers in the bacteriological laboratories there.

Dr. J. M. Petrie, Linnean Macleay Fellow of the Society in Biochemistry, completed his chemical examination of the leaves of *Macrozamia spiralis*, the results appearing in Part iii. of the Proceedings for 1920; he was unable in this investigation to identify any of the chemical constituents with the symptoms of poisoning observed in long-continued feeding of animals with the leaves. The general investigation of Cyanogenesis in Plants was continued, Part iv. "The Hydrocyanic Acid of *Heterodendron oleaefolia*—A Fodder Plant of New South Wales," appearing in Part iii. of the year's Proceedings. Future work in this subject has for its object the determination of the factors concerned with the storage of cyanogenetic glucosides as reserve food-material and the conditions under which these may become poisonous. The leaves of the poisonous plant, *Erythrophloeum* from Darwin have been investigated, and a very small quantity of an alkaloid obtained from them. The alkaloid is a most powerful poison, and an attempt is being made to ascertain its definite pharmacological action on animals. During the early part of the year Dr. Petrie's work was unfortunately interrupted by a severe attack of pneumonia and chronic bronchitis which took some months to pass off.

Miss Vera Irwin Smith, Linnean Macleay Fellow of the Society in Zoology has continued her studies of Nematodes and of the life-histories of Brachycerous Diptera. The family Stratiomyiidae is being dealt with first, being of special interest because of the peculiar intermediate position it occupies between the Orthorrhapha and Cyclorrhapha. The first results of this study have been embodied in a paper on the life-history of *Metoponia rubriceps*, which appeared in Part iv. of the Proceedings for 1920. A second paper, dealing with the mouth parts of the same insect, is in course of preparation. Attempts are also being made to breed it through from the egg. The families Mydaidae, Therevidae and Asilidae are also under observation, many larvae having been collected and bred through to various stages. Miss Smith's studies of the Nematodes have resulted in the completion of one paper, "The Nematode Parasites of the Domestic Pigeon in Australia," which also appeared in Part iv. of the year's Proceedings. It is her intention to continue these studies and deal in the same way with the parasites of the goat, chicken and lizard in Australia.

Miss Marjorie I. Collins, Linnean Macleay Fellow of the Society in Botany, has contributed two papers to the Proceedings during the year—"Note on Certain Variations of the Sporocyst in a species of Saprolegnia," and "On the Structure of the Resin-Secreting Glands in some Australian Plants," the observations for both papers having been made while she was demonstrating in Botany in the University of Adelaide.

Miss Collins has continued her observations on the secretion of resin in the bud of some Australian plants and the resultant phenomenon of "leaf-lacquering," common in xerophytic floras. At the same time she has also devoted some of her time to an ecological study of the mangrove and saltmarsh vegetation at Cabbage Tree Creek, Port Hacking. The encroachment of certain plant associations upon the partially drained salt-marsh has been observed, and samples of the soil collected from suitable places on the mangrove and salt-marsh areas have been investigated. In continuation of this side of her work, Miss Collins proposes to select another area for detailed ecological study, preferably a region with low annual rainfall.

Six applications for Linnean Macleay Fellowships, 1921-22, were received in response to the Council's invitation of 27th October, 1920. I have now the pleasure of making the first public announcement of the Council's re-appointment for another year from 1st April, 1921, of Dr. J. M. Petrie, Miss V. Irwin Smith and Miss Marjorie I. Collins to Fellowships in Biochemistry, Zoology, and Botany respectively; and of the appointment for one year of Miss Marguerite Henry, B.Sc., to a Fellowship in Zoology from 1st proximo. On behalf of the Society I have much pleasure in wishing them a very successful year's research.

Miss Henry has already had sufficient experience of research work to justify our expectation that her proposed research on the Freshwater Entomostraca of Australia and New Zealand, with special reference to their ecological distribution will form a worthy addition to the growing volume of work accomplished by the Linnean Macleay Fellows.

Miss Henry graduated in Science at the University of Sydney in 1917 with second class Honours in both Zoology and Botany. The same year she was appointed assistant-zoologist to the Committee of the Commonwealth Advisory Council of Science and Industry for the investigation of worm nodules in cattle, and has since been continuously engaged on this work. This investigation into the life-history of the parasitic Nematode (*Onchocerca gibsoni*) has involved a wide search for the intermediary host, in the course of which especial attention has been paid to the Tabanidae and freshwater crustacea. As a result, apart from the routine work involved, she has published three original papers, two of them, "On some Australian Cladocera," and "On some Australian Freshwater Copepoda and Ostracoda," in the Journal and Proceedings of the Royal Society of N.S.W., and one (in collaboration with Dr. E. W. Ferguson), "Tabanidae from Camden Haven District, N.S.W." in Part iv. of our Proceedings for 1919.

Dr. Walkom's duties as Secretary have allowed him some time to continue his researches on Australian Fossil Plants, and during the year he has completed an account of the Jurassic Plants from Talbragar, N.S.W., which has just appeared as a memoir of the Geological Survey of N.S.W. He has also almost completed the examination of the Glossopteris Flora of Queensland, in the course of which he has discovered an extremely interesting association of seeds with leaves of Glossopteris. The association appears to be sufficiently close to warrant the assertion that the seeds are those of a species of Glossopteris, and should this be

borne out, the discovery will be one of considerable interest and importance in Palaeobotany; for this reason, a short account of it has been prepared and forwarded for publication in England. A description of some Jurassic Plants from Western Australia, together with some notes on the occurrence of Otozamites in Australia has been completed and will appear in the coming year's Proceedings.

Is All Well with the Macleay Museum of the University of Sydney?

Sir William Macleay's scientific energy was directed into two main channels; and his efforts finally culminated in two important potentially fructifying enterprises. On the one hand, with the generous assistance of the Government, a duly constituted Macleay Museum. On the other hand, the Linnean Society of New South Wales, endowed not only for the ordinary purposes of a Scientific Society, but in an especial manner for the encouragement of research-work in Natural History. In his own characteristic way, Sir William linked up these two great enterprises in such a way, that each of the two corporate bodies to whom these enterprises were committed upon trust, in perpetuity, should have a *locus standi* for a co-ordinate, reciprocal interest in what the other was doing with his Trust.

Ever since it has been possible, the Linnean Society has given, in print, an annual report of its stewardship, and has distributed the same to all entitled to receive it. Where are the University's annual reports of its stewardship in connection with the Macleay Museum?

In 1873, Sir William offered the amalgamated collections of Alexander Macleay, W. S. Macleay, and his own, together with his scientific library, as a gift by bequest, upon trust, to the University, for the promotion of natural history, and the instruction of students, and the inhabitants of the colony in the same. The sum of £6000 was offered at the same time for the endowment of a Curatorship. At this time, the joint-collections of A. and W. S. Macleay amounted to 480 drawers of insects and other Annulosa, and W. Macleay's own collection to 320 drawers of insects. At this time Sir William had not appointed a Curator. The Senate gratefully accepted the offer. The Chancellor announced the offer, and its acceptance by the Senate, at the Commemoration in March, 1874. At this time too, the Linnean Society of New South Wales had not been so much as thought of, nor was its establishment anticipated.

After the offer had been made and accepted, but before the public announcement was made, Sir William decided to appoint a Curator, Mr. George Masters, and decided to convert his own entomological collection into a general collection, not only of Australian, but also of non-Australian Vertebrata, and Invertebrata; and for fifteen years, with the co-operation of Masters, he continued to carry out this intention. Why did he do this? To make the gift more worthy of acceptance by the University.

In 1885 or 1886, Sir William changed his mind about leaving his scientific library and the Macleay Collections as a bequest to the University. He withdrew his offer of the library altogether, and re-offered the now much enlarged Macleay Collections as a gift during his life-time, if and as soon as a "suitable" building — not a room in a building—was provided for them. For two reasons, because his own collection had been so enlarged, that his private museum was overcrowded, and that he naturally wished to have an opportunity of approving of the suitability of the "suitable" building offered. He also offered to transfer his experienced Curator, and an endowment-fund of £6000 to provide the Curator's salary.

The Senate, not having the money, approached the Government, and asked for its help to enable it to accept Mr. Macleay's munificent gift. The Government, knowing William Macleay, asked what he would approve of as a suitable building. His reply was, that he would approve of a fire-proof hall, 212 × 70 × 58 feet, with bays and a gallery all round, the architect's estimated cost of it being £16,000. The Government said the equivalent of, Certainly, you shall have it, go ahead forthwith!

When the building was finished in about 1889 [exact date not available], and approved of by Sir William, he transferred the amalgamated Collections, now a general collection, and not merely a collection of insects and other Annulosa to the University, to be housed in the "suitable" building, presented by the Government, together with his experienced and faithful Curator, George Masters; and paid over the sum of £6000, for the endowment of the Curator's salary. When the Collections had been suitably arranged, under the direction of the Professor of Biology with the co-operation of the Curator, as an exposition of the fauna of Australia, for which there was abundant material in the Collection, the Macleay Museum of the University of Sydney was duly constituted, in the technical sense. Thereupon, the University, *ipso facto*, became the Joint-Trustee of the Government and of Sir William Macleay, for the inhabitants of New South Wales, including students and others. The Joint-Trustee's duties were to administer the Trust committed to him in terms of the Trust. Among other things, therefore (1) to preserve, maintain, and safeguard the standard, agreed-upon suitability of the "suitable" building, presented by the Government solely and expressly for housing the suitably arranged Macleay Collections, and any additions that might be made to them, in perpetuity; and to abstain from tampering with it, and finally, spoiling it. (2) To preserve, maintain, and safeguard, the integrity of the Macleay Collections, in perpetuity; and under all circumstances to refrain from disrupting them, in perpetuity. (3) To keep interlopers from taking up their quarters in the Macleay Museum building, whether by the front door, or by "an over-bridge" or "a bridge-corridor," in perpetuity. (4) When the Collections had been suitably arranged, to abstain from periodically disturbing them; and finally sweeping away the exposition of the Australian fauna shown in the Jubilee photograph, with the besom of ingratitude, and thereby insulting the memories of the distinguished Macleays!

The University historian values the Macleay Collections, on a money-basis as "roughly assessed at £25,000." With the building, and the endowment fund for the Curatorship, the duly constituted Macleay Museum represented a benefaction of £47,000!

To-day, and for some time past, the Macleay Museum has been *deconstituted*, and as an exposition of the fauna of Australia spoilt, because the suitability of the "suitable" building has been so drastically interfered with, that this has involved the disruption of the Macleay Collections. One of Sir William's great enterprises, potentially so fructifying if properly managed, has become bankrupt. It has been hamstrung, paralysed, shorn of its attractiveness and inspiration.

Mr. J. H. Campbell, Hon. Treasurer, presented the balance sheets for the year 1920, duly signed by the Auditor, Mr. F. H. Rayment, F.C.P.A., Incorporated Accountant; and he moved that it be received and adopted, which was carried unanimously.